

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

Section I. (The Claims)

1. (Currently Amended) A cleaning composition including ~~an active cleaning combination (ACC), wherein said ACC consists of a quaternary base, in combination with~~ at least one of alkali and or alkaline earth base, and at least one additional component selected from the group consisting of a chelator, an oxirane species, and combinations thereof, wherein said chelator comprises a species selected from the group consisting of: 1-amino-1,2,4-triazole; 1-amino-1,2,3-triazole; 1-amino-5-methyl-1,2,3-triazole; 3-amino-1,2,4-triazole; 3-mercapto-1,2,4-triazole; 3-isopropyl-1,2,4-triazole; naphthotriazole; 2-mercaptobenzoimidazole; 2-mercaptobenzothiazole; 5-aminotetrazole; 5-amino-1,3,4-thiadiazole-2-thiol; 2,4-diamino-6-methyl-1,3,5-triazine; thiazole; triazine; methyltetrazole; 1,3-dimethyl-2-imidazolidinone; 1,5-pentamethylenetetrazole; 1-phenyl-5-mercaptotetrazole; diaminomethyltriazine; mercaptobenzothiazole; imidazoline thione; 4-methyl-4H-1,2,4-triazole-3-thiol; 5-amino-1,3,4-thiadiazole-2-thiol; benzothiazole; tritoyl phosphate; indiazole; adenine; thioglycerol; salicylamide; iminodiacetic acid; benzoguanamine; melamine; thiocyanuric acid; anthranilic acid; 3-mercaptopropanol; and combinations thereof, and said cleaning composition is useful for removing photoresist and/or sacrificial anti-reflective coating (SARC) materials from a substrate having such material(s) thereon.
2. (Original) The cleaning composition of claim 1, which is devoid of hydroxylamine therein.
3. (Cancelled)
4. (Previously Presented) The cleaning composition of claim 1, comprising the following components:
 - 0.1 - 40.0 weight % organic quaternary base;
 - 0.01-5 weight % alkali or alkaline earth base;
 - 0-80 weight % solvent(s) and/or amine(s);
 - 0-5 weight % surfactant;
 - 0 - 10 weight % chelator/passivation agent; and
 - 0 - 98 weight % water,wherein percentages of the components are percentages by weight, based on total weight of the composition, and wherein the total of the weight percentages of such components of the

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

composition does not exceed 100 weight %.

5. (Previously Presented) The cleaning composition of claim 1, including at least one additional ingredient selected from the group consisting of stabilizers, dispersants, anti-oxidants, fillers, penetration agents, adjuvants, additives, and excipients.

6. (Previously Presented) The cleaning composition of claim 1, comprising the following components:

- 2-15 weight % organic quaternary base;
- ~0.01-2 weight % alkali or alkaline earth base;
- 0-50 weight % solvent(s) and/or amine(s);
- ~0.01-2 weight % surfactant;
- 0 – 5 weight % chelator/passivation agent; and
- 40 – 95 weight % water,

wherein percentages of the components are percentages by weight, based on total weight of the composition, and wherein the total of the weight percentages of such components of the composition does not exceed 100 weight %.

7. (Previously Presented) A cleaning composition selected from the group consisting of Formulations A-C², wherein all percentages are by weight, based on the total weight of the formulation:

Formulation A

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
3.0% 4-methylmorpholine N-oxide
0.30% polyoxyethylene(150) dinonylphenyl ether
0.08% 2-mercaptobenzimidazole
91.0% water

Formulation B

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
3.0% 4-methylmorpholine N-oxide
0.30% polyoxyethylene(150) dinonylphenyl ether
0.20% 5-amino-1,3,4-thiadiazole-2-thiol
90.86% water

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

Formulation C

3.60% benzyltrimethylammonium hydroxide
0.27% potassium hydroxide
3.5% 4-methylmorpholine N-oxide
15.0% 4-(3-aminopropyl)morpholine
0.30% polyoxyethylene(150) dinonylphenyl ether
0.08% 2-mercaptobenzimidazole
77.25% water

Formulation D

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
20.0% dimethyl sulfoxide
0.08% 2-mercaptobenzimidazole
74.28% water

Formulation E

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
10.0% tetramethylene sulfone
0.30% oxirane, methyl-, polymer with oxirane, ether with 2,2'-(oxidoimino)bis(ethanol) (2:1),
N(-3(C9-11-isoalkyloxy)propyl)derivatives, C₁₀-rich
0.08% 2-mercaptobenzimidazole
83.98% water

Formulation F

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
10.0% di(ethyleneglycol)butyl ether
10.0% 2-(2-dimethylamino)ethoxyethanol
0.30% oxirane, methyl-, polymer with oxirane, ether with 2,2'-(oxidoimino)bis(ethanol) (2:1),
N(-3(C9-11-isoalkyloxy)propyl)derivatives, C₁₀-rich
74.06% water

Formulation G

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
10.0% tetramethylene sulfone
10.0% di(ethyleneglycol)butyl ether
0.10% oxirane, methyl-, polymer with oxirane, mono(octylphenyl)ether
0.08% 2-mercaptobenzimidazole
74.18% water,

Formulation H

benzyltrimethylammonium hydroxide, 40% aqueous solution	9.0 %
potassium hydroxide, 45% aqueous solution	0.6 %

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	20.0 %
water	59.02 %

Formulation I

benzyltrimethylammonium hydroxide, 40% aqueous solution	9.0 %
potassium hydroxide, 45% aqueous solution	0.6 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	15.0 %
water	64.02 %

Formulation J

benzyltrimethylammonium hydroxide, 40% aqueous solution	9.0 %
potassium hydroxide, 45% aqueous solution	0.6 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	10.0 %
water	69.02 %

Formulation K

benzyltrimethylammonium hydroxide, 40% aqueous solution	13.4 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
dinonylphenol polyoxyethylene	0.3 %
water	78.62 %

Formulation L

benzyltrimethylammonium hydroxide, 40% aqueous solution	13.4 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	1.2 %
2-mercaptobenzimidazole	0.08 %
dinonylphenol polyoxyethylene	0.3 %
water	78.02 %

Formulation M

tetramethylammonium hydroxide, 25% aqueous solution	5.85 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	1.2 %
2-mercaptobenzimidazole	0.08 %
dinonylphenol polyoxyethylene	0.3 %

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

water 85.57 %

Formulation N

tetramethylammonium hydroxide, 25% aqueous solution 2.93 %
N-methylmorpholine oxide, 50% aqueous solution 7.0 %
KOH, 45% aqueous solution 1.2 %
2-mercaptobenzimidazole 0.08 %
dinonylphenol polyoxyethylene 0.3 %
water 88.49 %

Formulation O

benzyltrimethylammonium hydroxide, 40% aqueous solution 7.2 %
N-methylmorpholine oxide, 50% aqueous solution 7.0 %
KOH, 45% aqueous solution 0.6 %
2-mercaptobenzimidazole 0.08 %
dinonylphenol polyoxyethylene 0.3 %
water 84.82 %

Formulation P

benzyltrimethylammonium hydroxide, 40% aqueous solution 3.6 %
N-methylmorpholine oxide, 50% aqueous solution 7.0 %
KOH, 45% aqueous solution 1.2 %
2-mercaptobenzimidazole 0.08 %
dinonylphenol polyoxyethylene 0.3 %
water 87.82 %

Formulation Q

benzyltrimethylammonium hydroxide, 40% aqueous solution 3.6 %
N-methylmorpholine oxide, 50% aqueous solution 7.0 %
KOH, 45% aqueous solution 0.6 %
2-mercaptobenzimidazole 0.08 %
dinonylphenol polyoxyethylene 0.3 %
water 88.42 %

Formulation R

benzyltrimethylammonium hydroxide, 40% aqueous solution 7.2 %
N-methylmorpholine oxide, 50% aqueous solution 7.0 %
KOH, 45% aqueous solution 0.3 %
2-mercaptobenzimidazole 0.08 %
dinonylphenol polyoxyethylene 0.3 %
water 85.12 %,

Formulation S

benzyltrimethylammonium hydroxide, 40% aqueous solution 22.26 %
Potassium hydroxide, 45% aqueous solution 0.6 %

Docket No.: 020732-97.668 (7493)

Appl. No. 10/792,038

2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
3-amino-5-mercapto-1,2,4-triazole	1.0 %
water	72.04 %

Formulation T

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
4-methyl-2-phenyl-imidazole	1.0 %
water	72.04 %

Formulation U

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
2-mercaptothiazoline	1.0 %
water	72.04 %

Formulation V

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
8-hydroxyquinoline	1.0 %
water	72.04 %

Formulation W

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
1-phenyl-2-tetrazoline-5-thione	1.0 %
water	72.04 %

Formulation X

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

gallic acid	1.0 %
water	72.04 %

Formulation Y

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
salicylic acid	1.0 %
water	72.04 %

Formulation Z

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
ascorbic acid	1.0 %
water	72.04 %

Formulation A²

benzyltrimethylammonium hydroxide, 40% aqueous solution	7.2 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
aminopropyl morpholine	10 %
4-methyl-2-phenyl-imidazole	1.0 %
water	81.12 %

Formulation B²

benzyltrimethylammonium hydroxide, 40% aqueous solution	7.2 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
aminopropyl morpholine	10 %
4-methyl-2-phenyl-imidazole	0.5 %
water	81.62 %

Formulation C²

benzyltrimethylammonium hydroxide, 40% aqueous solution	7.2 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
aminopropyl morpholine	10 %
4-methyl-2-phenyl-imidazole	1.0 %
water	81.02 %
dinonylphenol polyoxyethylene	0.1 %

wherein said cleaning composition is useful for removing photoresist and/or sacrificial anti-

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

reflective coating (SARC) materials from a substrate having such material(s) thereon.

8. (Currently Amended) A cleaning composition including an active cleaning combination (ACC) and dinonylphenol ethoxylate, wherein said ACC consists of a strong base in combination with an oxidant and said cleaning composition is useful for removing photoresist and/or sacrificial anti-reflective coating (SARC) materials from a substrate having such material(s) thereon.

9. (Currently Amended) The cleaning composition of claim 8, which includes an aqueous solution of at least one oxidant, a strong base, optionally a chelator and/or optionally a co-solvent ~~and/or a surfactant~~.

10. (Original) The cleaning composition of claim 1, wherein the ACC comprises potassium hydroxide.

11. (Original) The cleaning composition of claim 8, including the following components:

- 0.1-30 wt % strong base;
- 0.01-30 wt % oxidant;
- 0-10 wt % chelator;
- 0-5 wt % surfactant;
- 0-50 wt % co-solvent; and
- 20-98.9 wt % deionized water,

wherein percentages of the components are percentages by weight, based on total weight of the composition, and wherein the total of the weight percentages of such components of the composition does not exceed 100 weight %.

12. (Currently Amended) The cleaning composition of claim 11, wherein the strong base comprises a base species selected from the group consisting of potassium hydroxide, alkylammonium hydroxides and choline hydroxide.

13. (Original) The cleaning composition of claim 8, wherein the oxidant comprises an oxidant species selected from the group consisting of hydrogen peroxide, amine-N-oxides, perborate salts, persulfate salts, and combinations of two or more of the foregoing.

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

14. (Currently Amended) The cleaning composition of claim 1, ~~further comprising a~~ wherein the chelator comprises 2-mercaptobenzimidazole.
15. (Currently Amended) The cleaning composition of claim ~~[[14]]~~ 1, wherein the chelator is present in an amount greater than about 0.08 wt.%, based on the total weight of the composition ~~comprises a species selected from the group consisting of: triazoles; triazoles substituted with substituent(s) selected from the group consisting of C₁-C₈ alkyl, amino, thiol, mercapto, imino, carboxy and nitro; thiazoles; tetrazoles; imidazoles; phosphates; thiols; azines; glycerols; amino acids; carboxylic acids; alcohols; amides; and quinolines.~~
16. (Cancelled)
17. (Previously Presented) The composition of claim 1, further comprising a surfactant.
18. (Original) The composition of claim 17, wherein the surfactant comprises a surfactant species selected from the group consisting of: fluoroalkyl surfactants; polyethylene glycols; polypropylene glycols; polyethylene glycol ethers; polypropylene glycol ethers; carboxylic acid salts; dodecylbenzenesulfonic acid and salts thereof; polyacrylate polymers; dinonylphenyl polyoxyethylene; silicone polymers; modified silicone polymers; acetylenic diols; modified acetylenic diols, alkylammonium salts; modified alkylammonium salts; and combinations of two or more of the foregoing.
19. (Previously Presented) The composition of claim 1, further comprising a co-solvent.
20. (Original) The composition of claim 19, wherein the co-solvent comprises a co-solvent species selected from the group consisting of: amines; glycols; glycol ethers; polyglycol ethers; and combinations of two or more of the foregoing.
21. (Original) The composition of claim 19, wherein the co-solvent comprises a co-solvent species selected from the group consisting of: dimethyldiglycolamine; 1,8-diazabicyclo[5.4.0]undecene; aminopropylmorpholine; triethanolamine; methylethanolamine; diethylene glycol; propylene glycol; neopentyl glycol; hydroxyethylmorpholine; aminopropylmorpholine; di(ethylene glycol)monoethyl ether; di(propylene glycol)propyl ether; ethylene glycol phenyl ether; di(propylene glycol) butyl ether; butyl carbitol; polyglycol ethers;

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

and combinations of two or more of the foregoing.

22. (Original) The cleaning composition of claim 8, including:

- 0.1-30 wt % strong base
- 2-30 wt % oxidant
- 0-10 wt % chelator
- 0-5 wt % surfactant
- 20-98 wt % deionized water

wherein percentages of the components are percentages by weight, based on total weight of the composition, and wherein the total of the weight percentages of such components of the composition does not exceed 100 weight %.

23. (Currently Amended) The cleaning composition of claim 8, selected from the group consisting of Formulations D^2 - L^2 D^3 - R^3 , wherein all percentages are by weight, based on the total weight of the formulation:

Formulation D^2

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
3-amino-5-mercapto-1,2,4-triazole	0.1 %
water	73.9 %

Formulation E^2

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
ammonium tetrathiomolybdate	0.1 %
water	73.9 %

Formulation F^2

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	20.0 %
water	53.9 %

Formulation G^2

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
N-ethylmorpholine	20.0 %
water	53.9 %

Formulation H²

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminoethylpiperidine	20.0 %
water	53.9 %

Formulation I²

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
3-amino-5-mercapto-1,2,4-triazole	0.1 %
aminopropylmorpholine	20.0 %
water	53.9 %

Formulation J²

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
3-amino-5-mercapto-1,2,4-triazole	0.1 %
aminopropylmorpholine	10.0 %
water	63.9 %

Formulation K²

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	20.0 %
water	53.9 %

Formulation L²

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	10.0 %
water	63.9 %

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038Formulation M²

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
5-aminotetrazole	0.1 %
water	93.9 %

Formulation N²

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
2,4-diamino-6-methyl-1,3,5-triazine	0.1 %
water	93.9 %

Formulation O²

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
5-amino-1,3,4-thiadiazole-2-thiol	0.1 %
water	93.9 %

Formulation P²

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
1,2,4-triazole	0.1 %
water	93.9 %

Formulation Q²

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
2,4-dihydroxy-6-methylpyrimidine	0.1 %
water	93.9 %

Formulation R²

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
8-hydroxyquinoline	0.1 %
water	93.9 %

24. (Withdrawn) A method of removing photoresist and/or SARC material from a substrate having said material thereon, said method comprising contacting the substrate with a cleaning composition for sufficient time to at least partially remove said material from the substrate, wherein the cleaning composition includes ~~an active cleaning combination (ACC) consisting of a~~ quaternary base, ~~in combination with~~ at least one of alkali ~~and or~~ alkaline earth base, and at least

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

one additional component selected from the group consisting of a chelator, an oxirane species, and combinations thereof, wherein said chelator comprises a species selected from the group consisting of: 1-amino-1,2,4-triazole; 1-amino-1,2,3-triazole; 1-amino-5-methyl-1,2,3-triazole; 3-amino-1,2,4-triazole; 3-mercapto-1,2,4-triazole; 3-isopropyl-1,2,4-triazole; naphthotriazole; 2-mercaptobenzoimidazole; 2-mercaptobenzothiazole; 5-aminotetrazole; 5-amino-1,3,4-thiadiazole-2-thiol; 2,4-diamino-6-methyl-1,3,5-triazine; thiazole; triazine; methyltetrazole; 1,3-dimethyl-2-imidazolidinone; 1,5-pentamethylenetetrazole; 1-phenyl-5-mercaptotetrazole; diaminomethyltriazine; mercaptobenzothiazole; imidazoline thione; 4-methyl-4H-1,2,4-triazole-3-thiol; 5-amino-1,3,4-thiadiazole-2-thiol; benzothiazole; tritoyl phosphate; indiazole; adenine; thioglycerol; salicylamide; iminodiacetic acid; benzoguanamine; melamine; thiocyanuric acid; anthranilic acid; 3-mercaptopropanol; and combinations thereof.

25. (Withdrawn) The method of claim 24, wherein the substrate comprises a semiconductor device structure.
26. (Withdrawn) The method of claim 24, wherein the material comprises photoresist.
27. (Withdrawn) The method of claim 24, wherein the material comprises SARC material.
28. (Withdrawn) The method of claim 27, wherein the SARC material has been applied to a semiconductor device structure to minimize reflectivity variations during photolithographic patterning on the semiconductor device structure.
29. (Withdrawn) The method of claim 24, wherein said contacting is carried out for a time of from about 10 to about 45 minutes.
30. (Withdrawn) The method of claim 24, wherein said contacting is carried out at temperature in a range of from about 50°C to about 80°C.
31. (Withdrawn) The method of claim 24, wherein the composition is devoid of hydroxylamine therein.
32. (Cancelled)

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

33. (Withdrawn) The method of claim 24, wherein the composition comprises the following components:

- 0.1 - 40.0 weight % organic quaternary base;
- 0.01-5 weight % alkali or alkaline earth base;
- 0-80 weight % solvent(s) and/or amine(s);
- 0-5 weight % surfactant;
- 0 - 10 weight % chelator/passivation agent; and
- 0 - 98 weight % water,

wherein percentages of the components are percentages by weight, based on total weight of the composition, and wherein the total of the weight percentages of such components of the composition does not exceed 100 weight %.

34. (Withdrawn) The method of claim 24, wherein the composition includes at least one additional ingredient selected from the group consisting of stabilizers, dispersants, anti-oxidants, fillers, penetration agents, adjuvants, additives, fillers, and excipients.

35. (Withdrawn) The method of claim 24, wherein the composition comprises the following components:

- 2-15 weight % organic quaternary base;
- ~0.01-2 weight % alkali or alkaline earth base;
- 0-50 weight % solvent(s) and/or amine(s);
- ~0.01-2 weight % surfactant;
- 0 - 5 weight % chelator/passivation agent; and
- 40 - 95 weight % water,

wherein percentages of the components are percentages by weight, based on total weight of the composition, and wherein the total of the weight percentages of such components of the composition does not exceed 100 weight %.

36. (Withdrawn) A method of removing photoresist and/or SARC material from a substrate having said material thereon, said method comprising contacting the substrate with a cleaning composition for sufficient time to at least partially remove said material from the substrate, wherein the cleaning composition is selected from the group consisting of Formulations A-C², wherein all percentages are by weight, based on the total weight of the formulation:

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

Formulation A

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
3.0% 4-methylmorpholine N-oxide
0.30% polyoxyethylene(150) dinonylphenyl ether
0.08% 2-mercaptobenzimidazole
91.0% water

Formulation B

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
3.0% 4-methylmorpholine N-oxide
0.30% polyoxyethylene(150) dinonylphenyl ether
0.20% 5-amino-1,3,4-thiadiazole-2-thiol
90.86% water

Formulation C

3.60% benzyltrimethylammonium hydroxide
0.27% potassium hydroxide
3.5% 4-methylmorpholine N-oxide
15.0% 4-(3-aminopropyl)morpholine
0.30% polyoxyethylene(150) dinonylphenyl ether
0.08% 2-mercaptobenzimidazole
77.25% water

Formulation D

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
20.0% dimethyl sulfoxide
0.08% 2-mercaptobenzimidazole
74.28% water

Formulation E

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
10.0% tetramethylene sulfone
0.30% oxirane, methyl-, polymer with oxirane, ether with 2,2'-(oxidoimino)bis(ethanol) (2:1),
N-(3(C9-11-isoalkyloxy)propyl)derivatives, C₁₀-rich
0.08% 2-mercaptobenzimidazole
83.98% water

Formulation F

5.36% benzyltrimethylammonium hydroxide
0.28% potassium hydroxide
10.0% di(ethyleneglycol)butyl ether

Docket No.: 020732-97.668 (7493)
 Appl. No. 10/792,038

10.0% 2-(2-dimethylamino)ethoxy)ethanol
 0.30% oxirane, methyl-, polymer with oxirane, ether with 2,2'-(oxidoimino)bis(ethanol) (2:1),
 N-(3(C9-11-isoalkyloxy)propyl)derivatives, C₁₀-rich.
 74.06% water

Formulation G

5.36% benzyltrimethylammonium hydroxide
 0.28% potassium hydroxide
 10.0% tetramethylene sulfone
 10.0% di(ethyleneglycol)butyl ether
 0.10% oxirane, methyl-, polymer with oxirane, mono(octylphenyl)ether
 0.08% 2-mercaptobenzimidazole
 74.18% water,

Formulation H

benzyltrimethylammonium hydroxide, 40% aqueous solution	9.0 %
potassium hydroxide, 45% aqueous solution	0.6 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	20.0 %
water	59.02 %

Formulation I

benzyltrimethylammonium hydroxide, 40% aqueous solution	9.0 %
potassium hydroxide, 45% aqueous solution	0.6 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	15.0 %
water	64.02 %

Formulation J

benzyltrimethylammonium hydroxide, 40% aqueous solution	9.0 %
potassium hydroxide, 45% aqueous solution	0.6 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	10.0 %
water	69.02 %

Formulation K

benzyltrimethylammonium hydroxide, 40% aqueous solution	13.4 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

dinonylphenol polyoxyethylene	0.3 %
water	78.62 %

Formulation L

benzyltrimethylammonium hydroxide, 40% aqueous solution	13.4 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	1.2 %
2-mercaptobenzimidazole	0.08 %
dinonylphenol polyoxyethylene	0.3 %
water	78.02 %

Formulation M

tetramethylammonium hydroxide, 25% aqueous solution	5.85 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	1.2 %
2-mercaptobenzimidazole	0.08 %
dinonylphenol polyoxyethylene	0.3 %
water	85.57 %

Formulation N

tetramethylammonium hydroxide, 25% aqueous solution	2.93 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	1.2 %
2-mercaptobenzimidazole	0.08 %
dinonylphenol polyoxyethylene	0.3 %
water	88.49 %

Formulation O

benzyltrimethylammonium hydroxide, 40% aqueous solution	7.2 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
dinonylphenol polyoxyethylene	0.3 %
water	84.82 %

Formulation P

benzyltrimethylammonium hydroxide, 40% aqueous solution	3.6 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	1.2 %
2-mercaptobenzimidazole	0.08 %
dinonylphenol polyoxyethylene	0.3 %
water	87.82 %

Formulation Q

benzyltrimethylammonium hydroxide, 40% aqueous solution	3.6 %
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Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
dinonylphenol polyoxyethylene	0.3 %
water	88.42 %

Formulation R

benzyltrimethylammonium hydroxide, 40% aqueous solution	7.2 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
KOH, 45% aqueous solution	0.3 %
2-mercaptobenzimidazole	0.08 %
dinonylphenol polyoxyethylene	0.3 %
water	85.12 %

Formulation S

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
3-amino-5-mercapto-1,2,4-triazole	1.0 %
water	72.04 %

Formulation T

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
4-methyl-2-phenyl-imidazole	1.0 %
water	72.04 %

Formulation U

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
2-mercaptothiazoline	1.0 %
water	72.04 %

Formulation V

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
8-hydroxyquinoline	1.0 %

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

water 72.04 %

Formulation W

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
l-phenyl-2-tetrazoline-5-thione	1.0 %
water	72.04 %

Formulation X

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
gallic acid	1.0 %
water	72.04 %

Formulation Y

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
salicylic acid	1.0 %
water	72.04 %

Formulation Z

benzyltrimethylammonium hydroxide, 40% aqueous solution	22.26 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
methyldiethanolamine	2.33 %
phosphoric acid (86 %)	1.69 %
ascorbic acid	1.0 %
water	72.04 %

Formulation A²

benzyltrimethylammonium hydroxide, 40% aqueous solution	7.2 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
aminopropyl morpholine	10 %
4-methyl-2-phenyl-imidazole	1.0 %
water	81.12 %

Formulation B²

benzyltrimethylammonium hydroxide, 40% aqueous solution	7.2 %
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Docket No.: 020732-97.668 (7493)

Appl. No. 10/792,038

Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
aminopropyl morpholine	10 %
4-methyl-2-phenyl-imidazole	0.5 %
water	81.62 %

Formulation C²

benzyltrimethylammonium hydroxide, 40% aqueous solution	7.2 %
Potassium hydroxide, 45% aqueous solution	0.6 %
2-mercaptobenzimidazole	0.08 %
aminopropyl morpholine	10 %
4-methyl-2-phenyl-imidazole	1.0 %
water	81.02 %
dinonylphenol polyoxyethylene	0.1 %

37. (Withdrawn) A method of removing photoresist and/or SARC material from a substrate having said material thereon, said method comprising contacting the substrate with a cleaning composition for sufficient time to at least partially remove said material from the substrate, wherein the cleaning composition includes the active cleaning combination (ACC) of claim 8.

38. (Withdrawn) The method of claim 37, wherein the cleaning composition includes an aqueous solution of at least one oxidant, a strong base, optionally a chelator and/or optionally a co-solvent ~~and/or a surfactant~~.

39. (Withdrawn) The method of claim 24, wherein the ACC comprises potassium hydroxide.

40. (Withdrawn) The method of claim 37, wherein the cleaning composition includes the following components:

- 0.1-30 wt % strong base;
- 0.01-30 wt % oxidant;
- 0-10 wt % chelator;
- 0-5 wt % surfactant;
- 0-50 wt % co-solvent; and
- 20-98.9 wt % deionized water,

wherein percentages of the components are percentages by weight, based on total weight of the composition, and wherein the total of the weight percentages of such components of the composition does not exceed 100 weight %.

Docket No.: 020732-97.668 (7493)

Appl. No. 10/792,038

41. (Withdrawn) The method of claim 40, wherein the strong base comprises a base species selected from the group consisting of potassium hydroxide and alkylammonium hydroxides and choline hydroxide.
42. (Withdrawn) The method of claim 37, wherein the oxidant comprises an oxidant species selected from the group consisting of hydrogen peroxide, amine-N-oxides, perborate salts, persulfate salts, and combinations of two or more of the foregoing.
43. (Withdrawn) The method of claim 24, wherein the ~~cleaning composition further~~ comprises a chelator comprises 2-mercaptobenzimidazole.
44. (Withdrawn) The method of claim 43, wherein the chelator is present in an amount greater than about 0.08 wt.%, based on the total weight of the composition ~~comprises a species selected from the group consisting of: triazoles; triazoles substituted with substituent(s) selected from the group consisting of C₁-C₈ alkyl, amino, thiol, mercapto, imino, carboxy and nitro; thiazoles; tetrazoles; imidazoles; phosphates; thiols; azines; glycerols; amino acids; carboxylic acids; alcohols; amides; and quinolines.~~
45. (Withdrawn) The method of claim 24, wherein the quaternary base comprises benzyltrimethylammonium hydroxide ~~43, wherein the chelator comprises a chelator species selected from the group consisting of: 1,2,4 triazole; benzotriazole; tolyltriazole; 5-phenyl-benzotriazole; 5-nitro-benzotriazole; 1-amino-1,2,4 triazole; hydroxybenzotriazole; 2-(5-amino-pentyl) benzotriazole; 1-amino-1,2,3 triazole; 1-amino-5-methyl-1,2,3 triazole; 3-amino-1,2,4 triazole; 3-mercapto-1,2,4 triazole; 3-isopropyl-1,2,4 triazole; 5-phenylthiol-benzotriazole; halo-benzotriazoles wherein halo is selected from the group consisting of F, Cl, Br and I; naphthotriazole; 2-mercaptobenzoimidazole; 2-mercaptobenzothiazole; 5-aminotetrazole; 5-amino-1,3,4 thiadiazole-2-thiol; 2,4-diamino-6-methyl-1,3,5 triazine; thiazole; triazine; methyltetrazole; 1,3-dimethyl-2-imidazolidinone; 1,5-pentamethylenetetrazole; 1-phenyl-5-mercaptotetrazole; diaminomethyltriazine; mercaptobenzothiazole; imidazoline-thione; mercaptobenzimidazole; 4-methyl-4H-1,2,4 triazole-3-thiol; 5-amino-1,3,4 thiadiazole-2-thiol; benzothiazole; tritoyl-phosphate; indazole; guanine; adenine; glycerol; thioglycerol; nitrilotriacetic acid; salicylamide; iminodiacetic acid; benzoguanamine; melamine; thiocyanuric acid; anthranilic acid; 8-hydroxyquinoline; 5-carboxylic acid-benzotriazole; 3-mercapto-1-propanol; boric acid; and iminodiacetic acid.~~

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

46. (Withdrawn) The method of claim 24, wherein the cleaning composition further comprises a surfactant.

47. (Withdrawn) The method of claim 46, wherein the surfactant comprises a surfactant species selected from the group consisting of: fluoroalkyl surfactants; polyethylene glycols; polypropylene glycols; polyethylene glycol ethers; polypropylene glycol ethers; carboxylic acid salts; dodecylbenzenesulfonic acid and salts thereof; polyacrylate polymers; dinonylphenyl polyoxyethylene; silicone polymers; modified silicone polymers; acetylenic diols; modified acetylenic diols, alkylammonium salts; modified alkylammonium salts; and combinations of two or more of the foregoing.

48. (Withdrawn) The method of claim 24, wherein the cleaning composition further comprises a co-solvent.

49. (Withdrawn) The method of claim 48, wherein the co-solvent comprises a co-solvent species selected from the group consisting of: amines; glycols; glycol ethers; polyglycol ethers; and combinations of two or more of the foregoing.

50. (Withdrawn) The method of claim 48, wherein the co-solvent comprises a co-solvent species selected from the group consisting of: dimethyldiglycolamine; 1,8-diazabicyclo[5.4.0]undecene; aminopropylmorpholine; triethanolamine; methylethanolamine; diethylene glycol; propylene glycol; neopentyl glycol; hydroxyethylmorpholine; aminopropylmorpholine; di(ethylene glycol)monoethyl ether; di(propylene glycol)propyl ether; ethylene glycol phenyl ether; di(propylene glycol) butyl ether; butyl carbitol; polyglycol ethers; and combinations of two or more of the foregoing.

51. (Withdrawn) The method of claim 37, wherein the composition includes:

0.1-30 wt % strong base

2-30 wt % oxidant

0-10 wt % chelator

0-5 wt % surfactant

20-98 wt % deionized water

wherein percentages of the components are percentages by weight, based on total weight of the

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

composition, and wherein the total of the weight percentages of such components of the composition does not exceed 100 weight %.

52. (Withdrawn) The method of claim 37, wherein the cleaning composition is selected from the group consisting of Formulations D^2-L^2 D^3-R^3 , wherein all percentages are by weight, based on the total weight of the formulation:

Formulation D^2

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
3-amino-5-mercapto-1,2,4-triazole	0.1 %
water	73.9 %

Formulation E^2

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
ammonium tetrathiomolybdate	0.1 %
water	73.9 %

Formulation F^2

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	20.0 %
water	53.9 %

Formulation G^2

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
N-ethylmorpholine	20.0 %
water	53.9 %

Formulation H^2

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminoethylpiperidine	20.0 %

Docket No.: 020732-97.668 (7493)
 Appl. No. 10/792,038

water 53.9 %

Formulation I²

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
3-amino-5-1,2,4-triazole	0.1 %
aminopropylmorpholine	20.0 %
water	53.9 %

Formulation J²

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
3-amino-5-1,2,4-triazole	0.1 %
aminopropylmorpholine	10.0 %
water	63.9 %

Formulation K²

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	20.0 %
water	53.9 %

Formulation L²

tetramethylammonium hydroxide, 25% aqueous solution	14.7 %
N-methylmorpholine oxide, 50% aqueous solution	7.0 %
dinonylphenol ethoxylate, 7% aqueous solution	4.3 %
2-mercaptobenzimidazole	0.1 %
aminopropylmorpholine	10.0 %
water	63.9 %

Formulation M²

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
5-aminotetrazole	0.1 %
water	93.9 %

Formulation N²

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
2,4-diamino-6-methyl-1,3,5-triazine	0.1 %
water	93.9 %

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

Formulation Q²

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
5-amino-1,3,4-thiadiazole-2-thiol	0.1 %
water	93.9 %

Formulation P²

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
1,2,4-triazole	0.1 %
water	93.9 %

Formulation Q³

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
2,4-dihydroxy-6-methylpyrimidine	0.1 %
water	93.9 %

Formulation R³

tetramethylammonium hydroxide, 25% aqueous solution	4.0 %
hydrogen peroxide, 30% aqueous solution	2.0 %
8-hydroxyquinoline	0.1 %
water	93.9 %

53. (Previously Presented) The cleaning composition of claim 1, wherein the quaternary base comprises an organic quaternary ammonium base.

54. (Previously Presented) The cleaning composition of claim 1, wherein the quaternary base comprises benzyltrimethylammonium hydroxide.

55. (Previously Presented) The cleaning composition of claim 1, wherein the ACC comprises benzyltrimethylammonium hydroxide and potassium hydroxide.

56. (Previously Presented) The cleaning composition of claim 19, wherein the co-solvent comprises a glycol ether.

57. (Previously Presented) The cleaning composition of claim 1 comprising benzyltrimethylammonium hydroxide; potassium hydroxide; tetramethylene sulfone;

Docket No.: 020732-97.668 (7493)
Appl. No. 10/792,038

di(ethyleneglycol)butyl ether; oxirane, methyl-, polymer with oxirane, mono(octylphenyl)ether; 2-mercaptobenzimidazole; and water.

58. (Withdrawn) A method of making a semiconductor device comprising contacting the substrate with the cleaning composition of claim 1 for sufficient time to at least partially remove said material from the substrate.

59. (Previously Presented) The cleaning composition of claim 1, further comprising oxidant.